

Emerging Market Debt

WHITEPAPER

FEBRUARY 2023

In this document we provide a brief history of emerging market debt, types of emerging market debt within the investible universe, and some of the most widely used benchmarks. We examine the rationale behind investment in the asset class and potential risks associated with it. We also review historical performance, the implementation options available to institutional investors, and provide recommendations.

CONTRIBUTORS

Alison Adams, PhD
Frank Benham, CFA, CAIA
Jessica Lau
Mark Mckeown, CFA

Emerging market debt is issued by sovereign and, to a lesser extent, corporate issuers. While it was historically a small part of bond markets, the asset class has continued to grow over time as emerging capital markets have developed, liquidity has increased, and credit quality has improved. Thus, investors in emerging market debt now commonly include institutional investors such as pension funds and endowments.

Before the late 1980s, institutional investment in emerging market debt was virtually nonexistent. Instead, international banks, local investors, and distressed loan buyers were the market's primary investors. Emerging market debt began to take off in 1989 when the Brady plan, named after then-US Treasury Secretary Nicholas Brady, was announced. The Brady plan was designed to restructure much of the debt of developing countries, predominantly in Latin America, that was not being fully serviced (i.e., the countries were not repaying their loans). The plan provided legal frameworks to securitize and restructure the existing bank loans of developing countries into tradeable bonds.

In the years that followed, a number of countries, including Argentina, Brazil, Panama, Russia, and Venezuela, issued hundreds of billions of dollars¹ of so-called "Brady bonds." These Brady bonds facilitated the standardization of emerging market debt, granting debt relief in exchange for greater assurance of collectability, linking debt relief to economic policy reforms, and making the bonds highly tradable. Brady bonds ultimately paved the way for the expansion of the emerging market debt investor base.

¹ The Brady bonds were sovereign debt securities denominated in US dollars but issued by the developed countries and backed by US Treasury securities.

Types of emerging market debt

Emerging market debt can be divided into two broad categories based on the currency the bond is denominated in: external and local. External currency (aka, “hard” currency) debt is issued in a currency other than the country’s home currency (usually in US Dollars or Euros). Local debt is issued in the currency of the issuing country. Since the late 1990s, emerging country governments have increasingly turned to local currency debt, motivated by a desire to alleviate the currency mismatch of borrowing in external debt markets and receiving government revenues in local currency. Issuing in local currency provides a self-insurance mechanism for government financing and reduces the risks associated with a balance of payment crisis.² Figure 1 shows local currency sovereign debt has been growing at a faster pace than hard currency sovereign debt in the past decade.

² A balance of payments crisis is an economic condition that can evolve from a shortage of foreign currency to purchase critical foreign goods for import and service foreign currency debts. Typically, a country earns foreign currency to purchase critical imports through export revenues and by foreign investment. When a country enjoys healthy export revenues and foreign investments, meeting foreign obligations is manageable. When an economy tips into a negative reinforcing cycle where there is a scarcity of foreign currency, a country may be forced to debase their currency, making it increasingly difficult to service external debt obligations and import critical foreign goods. When a country experiences a balance of payments crisis it becomes vulnerable to capital flight.

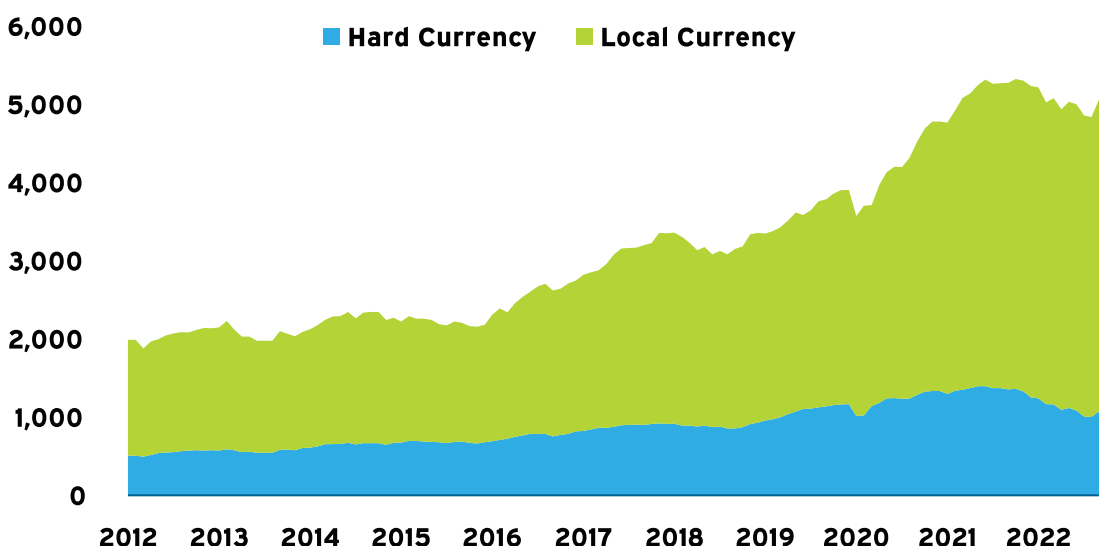


FIGURE 1
Growth Trend of Emerging Market Sovereign Debt (USD Billions)

Source: JP Morgan. Hard currency proxied by the EMBI Global index and Local currency proxied by the JPM GBI-EM Broad index. Data as of December 31, 2022.

Countries issuing local bonds tend to have more advanced capital markets that can support local debt issuance. Local financial institutions like banks, insurance companies, and pension funds are the main purchasers of local currency sovereign debt. In total, local currency denominated bonds represented nearly 80% of all emerging market sovereign debt outstanding.³ Despite the shift toward local debt, the external debt market remains an important source of funding for many countries. Emerging countries with less developed local bond markets are still more likely to obtain financing through external debt.

³ Source: JP Morgan. Hard currency proxied by the EMBI Global index and Local currency proxied by the JPM GBI-EM Broad index. Data as of December 31, 2022.

More than \$5 trillion of emerging debt is currently outstanding – about one-fifth of the total global fixed income universe⁴. However, the investable universe is a small portion of the total market capitalization, as local pension funds and banks hold large portions of their nation’s debt, and local regulations may limit foreign investor access to some local debt markets. Still, the investable universe has grown substantially over the past twenty years (see Figure 2).

⁴ Bank of International Settlement Debt Statistics as of Q2 2022. As of June 2022, the BIS estimated that emerging market debt, in all currency denominations totaled approximately \$5.04 trillion dollars. A substantial portion of emerging market debt may not be investible for foreign investors but is held in local pension funds, banks, investment funds, insurance companies and governmental entities. In some cases, national regulations may prohibit or cap foreign investors’ access to local debt markets.

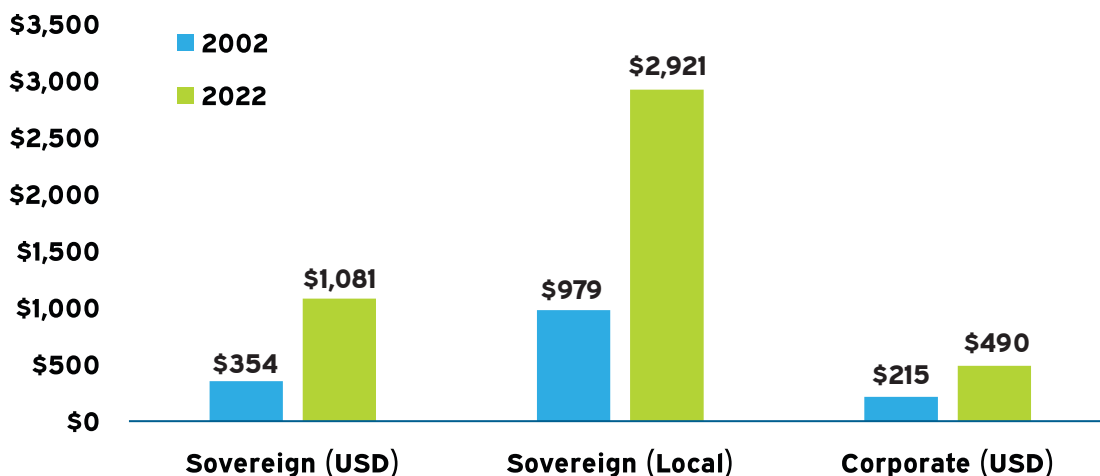


FIGURE 2
Size of the Investible Emerging Market Debt Universe (USD Billions)

Source: JP Morgan. Hard currency sovereign proxied by the EMBI Global index, Local currency sovereign proxied by the GBI-EM Global index, and Corporate proxied by CEMBI Broad Diversified index. Data shown is as of December 2002 and December 2022. Not all sovereign emerging market debt is investible, so that public debt market values may not align with EMD market capitalization values.

Another way of segmenting emerging market debt is into sovereign debt, which is issued by governments, and corporate debt, which is issued by companies located in emerging markets countries. Historically, sovereign debt has been the primary investment option for investors, but emerging markets corporate bonds represent a growing segment of the asset class. After the Global Financial Crisis (GFC), many emerging market corporations found they could issue debt in US dollars or euros at very low costs as interest rates for doing so remained well below interest rates for issuing in their home currencies. This is likely because global investors could receive a higher yield from investing in emerging market corporate bonds while not taking on the additional currency risks associated with buying local currency debt.

Emerging market corporate bonds normally pay higher yields than their sovereign counterparts. Corporations are often “ratings constrained” by the countries in which they are located, potentially leading to a “structural underrating” (i.e., the corporation may be more credit worthy than the government of the country in which they are domiciled).

The emerging markets thesis

The basic rationale behind investing in emerging market debt can be broadly categorized by 1) strong fundamentals, 2) attractive yields, and 3) diversification benefits.

Strong fundamentals

When investing in debt markets that pose a perceived credit risk, the primary concern for most investors is the ability and willingness of the issuer to service (i.e., pay) those debts. The improved fundamentals of many emerging market economies over the past 25 years have led to a better position on both measures.

Many emerging market economies have a lower government debt-to-GDP ratio than advanced economies. As Figure 3 shows, the average public debt-to-GDP ratios look favorable when compared that for to major developed market economies. This lower debt burden implies a higher level of sovereign creditworthiness among emerging market countries, or at least a higher ability to repay their debt.

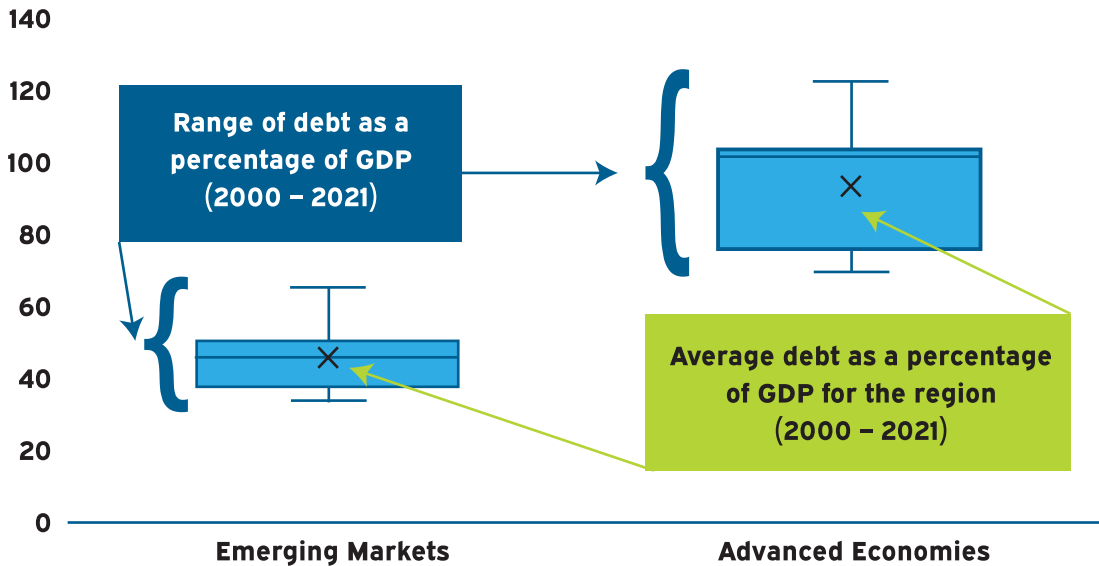


FIGURE 3
Public Debt-to-GDP Ratio:
Historical Ranges for
Emerging and Advanced
Economies (2000-2021)

Source: IMF. Data is for the period 2000 through 2021. Countries are those included in the JPM GBI-EM Global Diversified Index and the “G7” countries. Historical ranges show the average public debt-to-GDP ratio for each regional aggregate across twenty-one years. The figure also shows the absolute range of debt-to-GDP by regional aggregate between 2000 and 2021. Individual country debt-to-GDP ratios may be different than regional aggregates.

Since the Asian Financial Crisis in the late 1990s, emerging market governments have been actively reducing their external debt in favor of issuance in their home currencies. The development of local currency bond markets has been a positive development for emerging markets for several reasons. The reduction of US dollar denominated debt has reduced their dependence on US dollar revenues from exports. This has enabled emerging markets to allow their currencies to float relative to their trading partners.⁵

Another key factor supporting the progress in emerging markets’ economic management and debt sustainability has been their macroeconomic policies and growing independence of central banks from their respective governments. This political independence has reinforced operational independence. In 2021, the IMF identified monetary policies in 65% of the emerging market countries that follow forward-looking inflation-targeting regimes, and inflation has fallen and stabilized in most of these countries. Public finances in several countries are guided by fiscal rules. Indeed, developing countries adversely effected by the Asian Financial Crisis have since been more disciplined in maintaining a current account surplus (see Figure 4).⁶

⁵ Bank of International Settlement Debt Statistics as of Q2 2022. As of June 2022, the BIS estimated that emerging market debt, in all currency denominations totaled approximately \$5.04 trillion dollars. A substantial portion of emerging market debt may not be investible for foreign investors but is held in local pension funds, banks, investment funds, insurance companies and governmental entities. In some cases, national regulations may prohibit or cap foreign investors’ access to local debt markets.

⁶ A current account surplus occurs when a country exports more than they import, and this surplus can provide a buffer for developing economies if demand for their exports cools. Such improvement helped policymakers in emerging markets deploy unprecedented policy responses – both fiscal and monetary – during the COVID-19 pandemic.

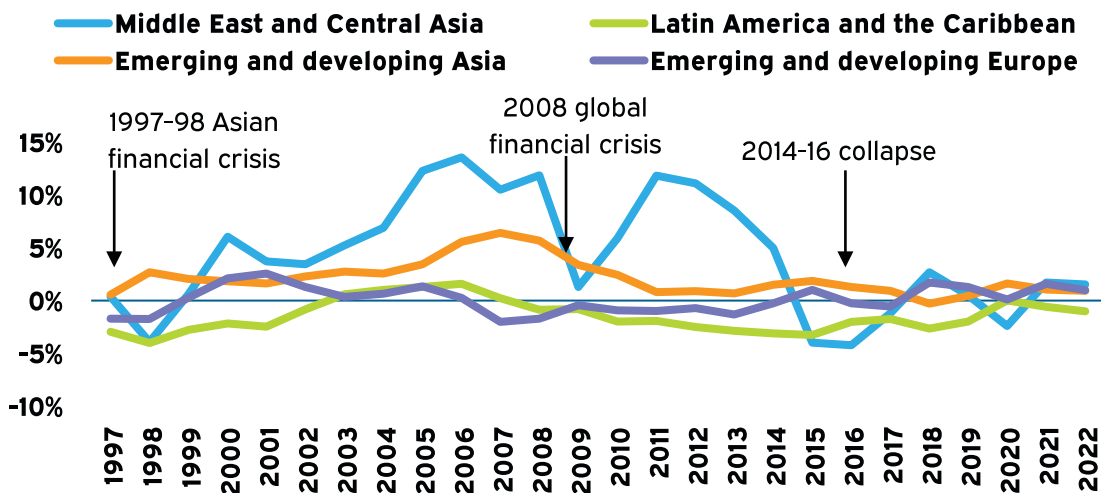


FIGURE 4
Current Account Balance
(% of GDP)

Source: International Monetary Fund, World Economic Outlook Databases as of August 2022.

Furthermore, emerging market debt has also seen improvements in credit quality. Over 70% of the universe was rated investment grade at the peak, though in recent years it has averaged around 50% (see Figure 5). This implies that, based on credit quality, this category of emerging market debt should be considered less risky than high yield bonds, especially as it poses little to no currency risk. Still, some issuers of hard currency bonds are commodity exporters (e.g., petrostates) that are characterized by political risks or very high levels of public and private debt that weigh on their credit ratings.

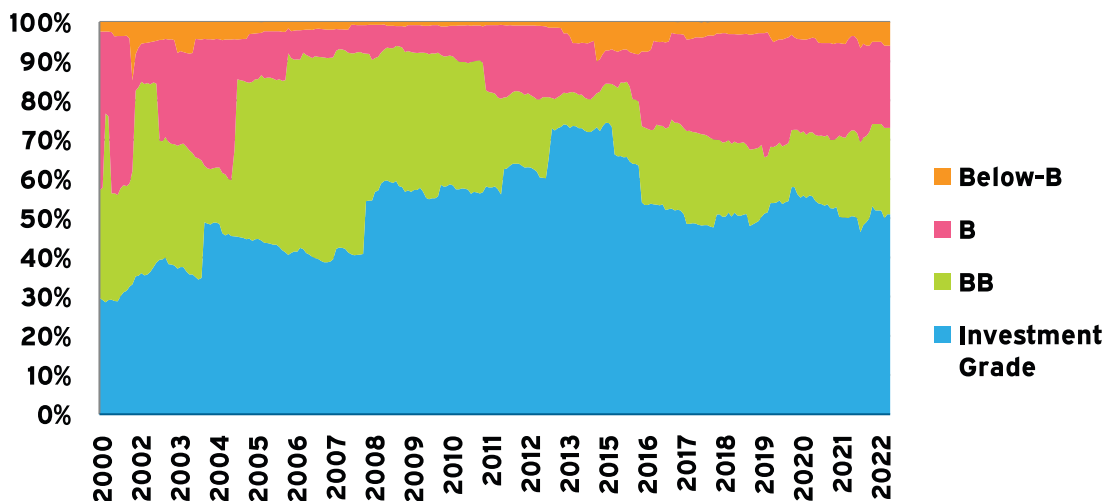


FIGURE 5
Sovereign Hard Currency Emerging Market Debt Credit Quality

Source: JP Morgan and Neuberger Berman. Data is for the period January 2000 – December 2022 for the JPM EMBI Global Diversified Index.

Emerging market local currency debt appears to have a better credit profile than hard currency debt. However, it is much easier for a government to service its local currency bonds with its own national currency. Hard currency debt may reduce foreign investor currency risks, but servicing dollar or euro denominated debt can be more challenging for a government. Many emerging market governments have pursued the development of a liquid local debt market to encourage domestic savings and investment. However, the same local currency volatility that can help government service local debt is a challenge for foreign investor returns when the currency weakens against hard currencies.

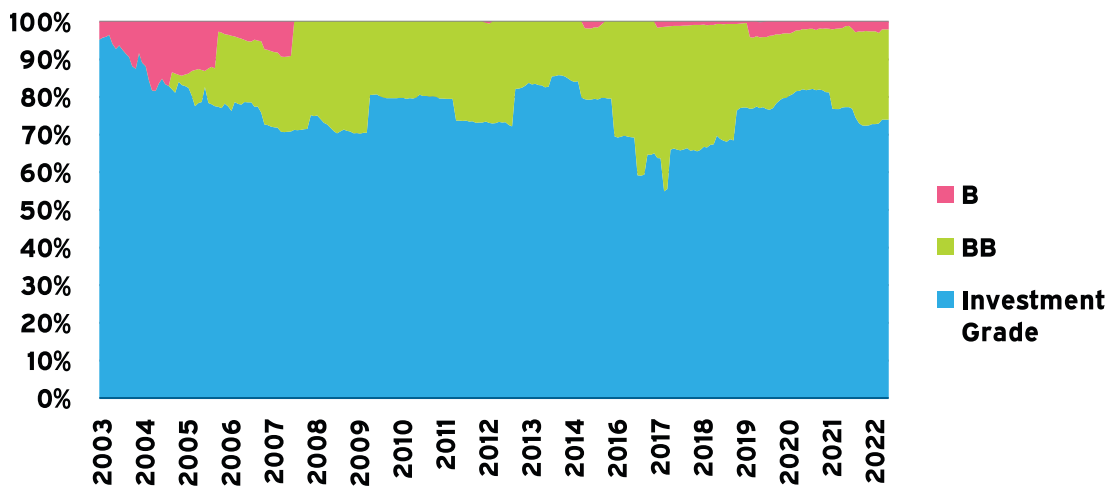


FIGURE 6
Sovereign Local Currency Emerging Market Debt Credit Quality

Source: JP Morgan and Neuberger Berman. Data is for the period January 2000 – December 2022 for the JPM EMBI Global Diversified Index.

Emerging market corporate debt is largely issued in hard currencies. Issuers usually have a business mix of local currency operations and access to dollar or euro revenues. Foreign investors that purchase emerging market corporate debt gain exposure to high quality emerging market businesses with hard currency return steams. However, after the GFC, BB and B credits gained as share of total investible markets while investment grade bonds declined to around 70% of the index.

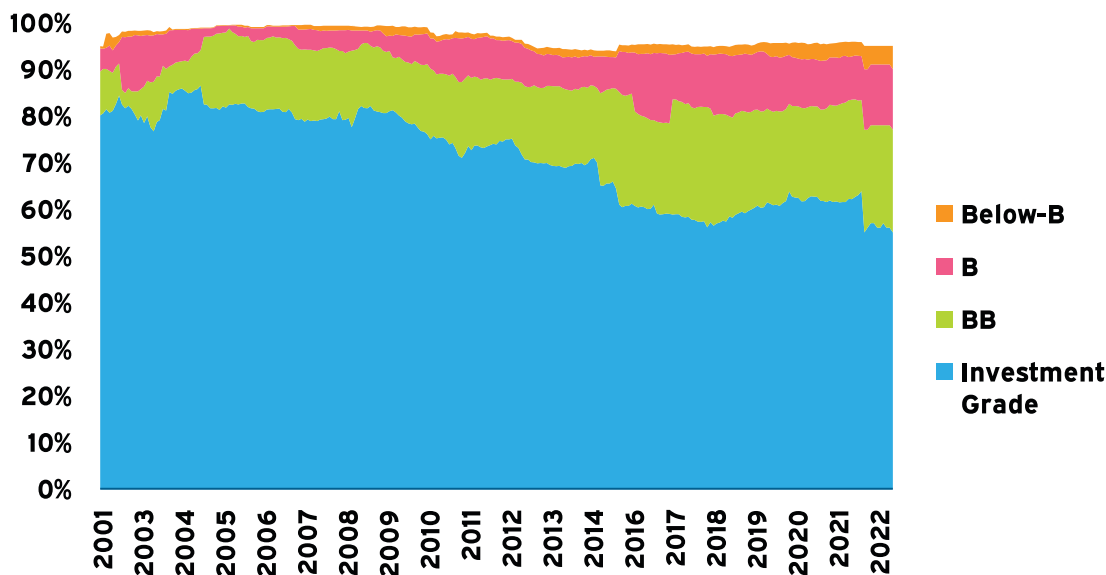


FIGURE 7
Corporate Hard Currency Emerging Market Debt Credit Quality

Source: JP Morgan and Neuberger Berman. Data is for the period January 2000 through December 2022 for the JP Morgan CEMBI index.

Note: Chart shows rated bonds as a percentage of total rated bonds. Unrated bonds are not shown.

Since the 1990s, as emerging market countries became better integrated into global capital markets, emerging market governments and corporations benefited from new sources of capital. Emerging market corporate issuance grew from 0.2% of GDP in 1990 to 2.2% of GDP in 2020.⁷ Over the same period, emerging market government debt grew from \$400 billion dollars to over \$9.5 trillion dollars.⁸ The steady rise in access to global capital markets has supported private investment and economic growth. This stronger economic growth improves the ability of emerging market issuers to service their debts, and it likewise reinforces their willingness to do so, as they want to maintain access to global debt markets to continue to finance their growth.

Attractive Yields

One of the primary reasons investors aggressively pursued emerging market debt post-GFC was that much of the emerging market debt universe offered higher yields than was on offer from many bonds issued by more advanced economies.⁹ As of December 2022, the additional yield (i.e., spread) emerging market sovereign debt provided over US Treasuries (1.3%) of comparable maturity averaged 4.6% for hard currency debt¹⁰. While yields have declined significantly from their peak during the GFC, they remain relatively attractive for investors interested in gaining a higher yield for their portfolio.

⁷ Source: Bank for International Settlements, I. Aldasoro et al., "Corporate Debt: Post-GFC through the Pandemic," Quarterly Review, June 2021.

⁸ Source: World Bank Data as of September 2022, JP Morgan and Blackrock. Brady bonds of 10 countries mostly from Latin America were restructure bank loans that became national bonds and formed the basis of the JPM EM bond indices in the early 1990s. Today, EM government bonds include quasi-sovereigns, local currency and hard currency bonds. Not all bonds are tradable. See Aberdeen Asset Management – EM government local currency debt market capitalization is ~\$8.4trillion and EM government US is ~\$1.1 trillion dollars. <https://www.abrdn.com/en-us/investor/insights-thinking-aloud/article-page/emerging-market-debt-one-asset-class-four-markets> as of September 2022.

⁹ Source: Bank for International Settlements, I. Aldasoro et al., "Corporate Debt: Post-GFC through the Pandemic," Quarterly Review, June 2021.

¹⁰ Source: Bloomberg and Meketa as of December 2022.

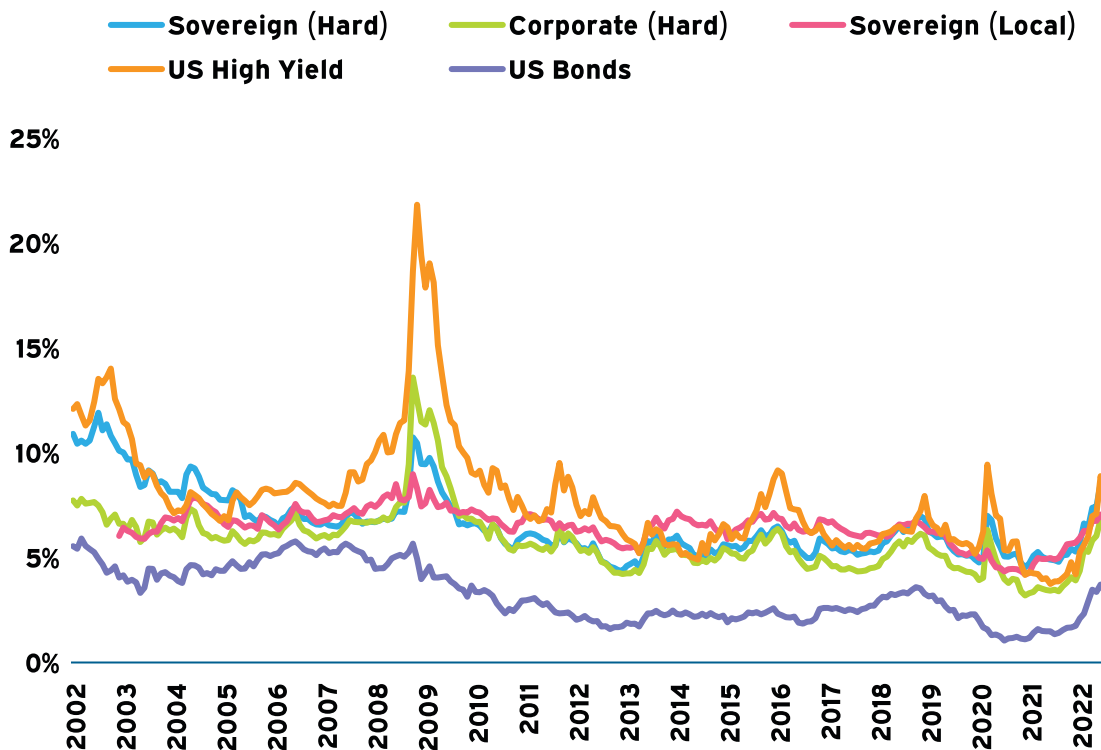


FIGURE 8
Yield-to-Worst for Emerging Market Debt

Source: JP Morgan and Neuberger Berman data as of September 2022. Hard currency EM debt is proxied by the JPM EMBI Global Diversified Index; EM corporate debt is proxied by the JPM CEMBI Broad Diversified index; Local currency EM debt is proxied by the JPM GBI-EM Global / Diversified index US high yield is proxied by the Bloomberg US High Yield index; US bonds are proxied by the Bloomberg US Aggregate index.

Emerging market bond yields have tended to reflect emerging market fundamentals over the past twenty years. For example, during the GFC, emerging market yields were lower than those for US high yield bonds. But during the taper tantrum in 2014, US high yield and emerging market yield spreads compressed together in response to a global reaction to the Fed’s signal for higher policy rates. As EM debt markets have matured, the spread differentials between US high yield and EM corporate and sovereign debts have narrowed, even though they appear to respond in a similar manner to global risk sentiment.

Diversification benefits

Emerging market debt offers geographical and macro-economic diversification. Adding any asset classes that is not perfectly correlated allows for the creation of more diversified portfolios.

From an interest rate standpoint, monetary policy in emerging market countries may be less influenced by US policy rates, hence the varying correlation with the US investment grade bond market (see Figure 9). Likewise, the economic growth cycle may not be aligned with that in the US, resulting in varying correlations with US equities. However, in times of extended global market turmoil such as the GFC and the onset of the COVID pandemic in 2020, correlations with other growth-oriented markets can spike. Unfortunately, these are the type of periods when diversification would prove most beneficial. As global capital markets have matured, global risk sentiment is increasingly important in driving EMD returns.

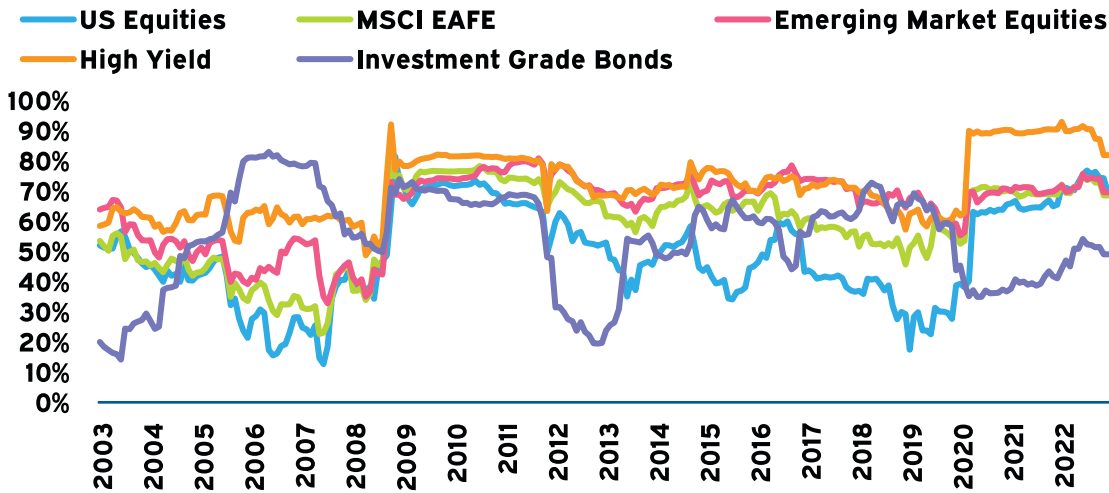


FIGURE 9
Rolling 3-Year Correlations with Sovereign Hard Currency EM Debt

Source: Bloomberg, eVestment, MSCI, and JPM as of December 2022. Hard currency EM debt is proxied by the JPM EMBI Global Diversified Index; US equities are proxied by the Russell 3000 index; Emerging market equities are proxied by the MSCI EM index; high yield is proxied by the Bloomberg US High Yield index; investment grade bonds are proxied by the Bloomberg US Aggregate index.

Over the extended period, hard currency emerging market debt (both sovereign and corporate) has been the most highly correlated with US high yield debt. Meanwhile, local currency EM debt has been the most highly correlated with emerging market equities, suggesting the influence that currency fluctuations have on both.

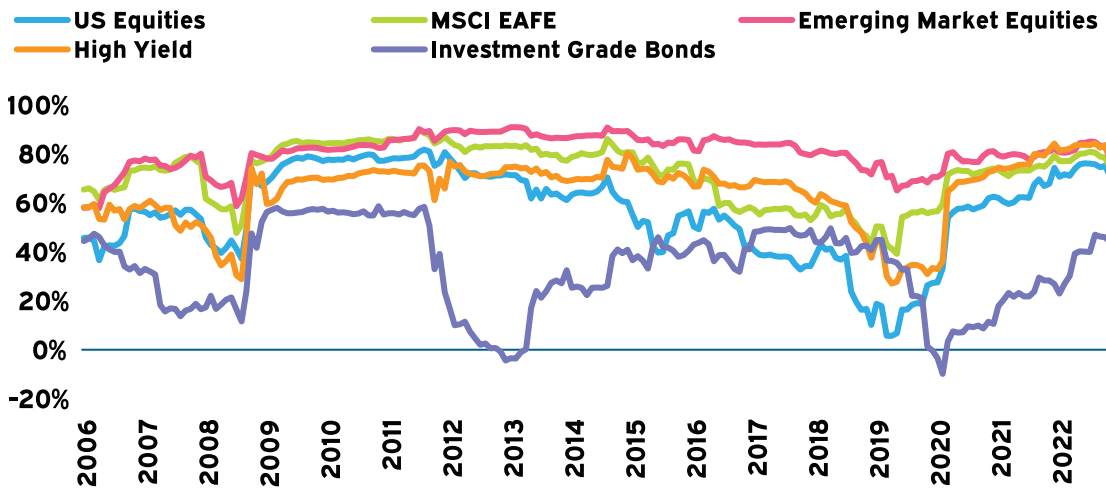


FIGURE 10
Rolling 3-Year Correlations with Sovereign Local Currency EM Debt

Source: Bloomberg, eVestment, MSCI, and JPM as of December 2022. Local currency EM debt is proxied by the JPM GBI-EM Global / Diversified index; US equities are proxied by the Russell 3000 index; Emerging market equities are proxied by the MSCI EM index; high yield is proxied by the Bloomberg US High Yield index; investment grade bonds are proxied by the Bloomberg US Aggregate index.

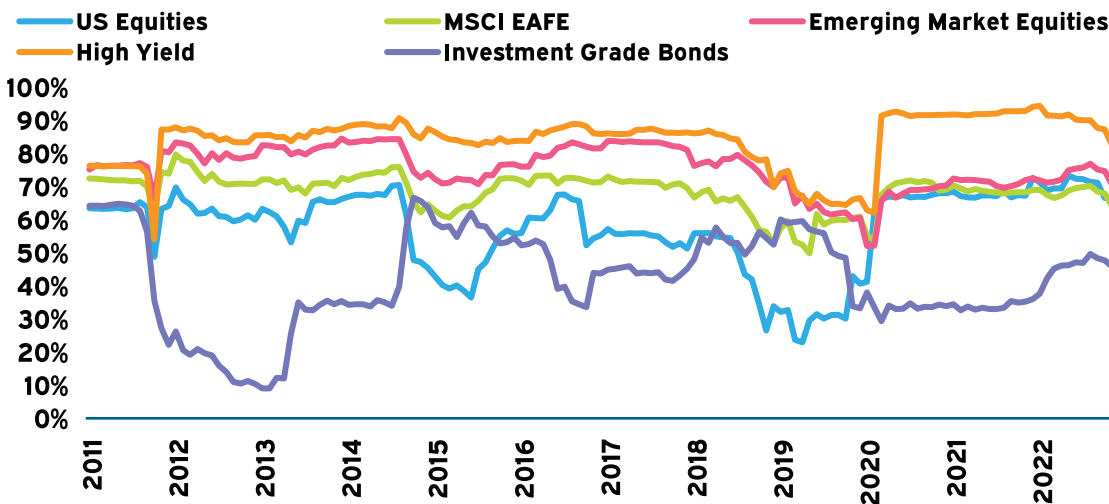


FIGURE 11
Rolling 3-Year Correlations with EM Hard Currency Corporate Debt

Source: Bloomberg, eVestment, MSCI, and JPM as of December 2022. EM corporate debt is proxied by the JPM CEMBI Broad Diversified index; US equities are proxied by the Russell 3000 index; Emerging market equities are proxied by the MSCI EM index; high yield is proxied by the Bloomberg US High Yield index; investment grade bonds are proxied by the Bloomberg US Aggregate index.

Potential risks associated with emerging market debt

Volatility

The volatility of emerging market bonds tends to more closely resemble that for high yield bonds than for investment grade bonds (see Figure 12), despite possessing higher credit quality, on average, than the high yield market. Moreover, emerging markets are highly susceptible to crises that reduce investors' appetite for more risky assets. For example, volatility spiked during the GFC and the outbreak of the coronavirus.

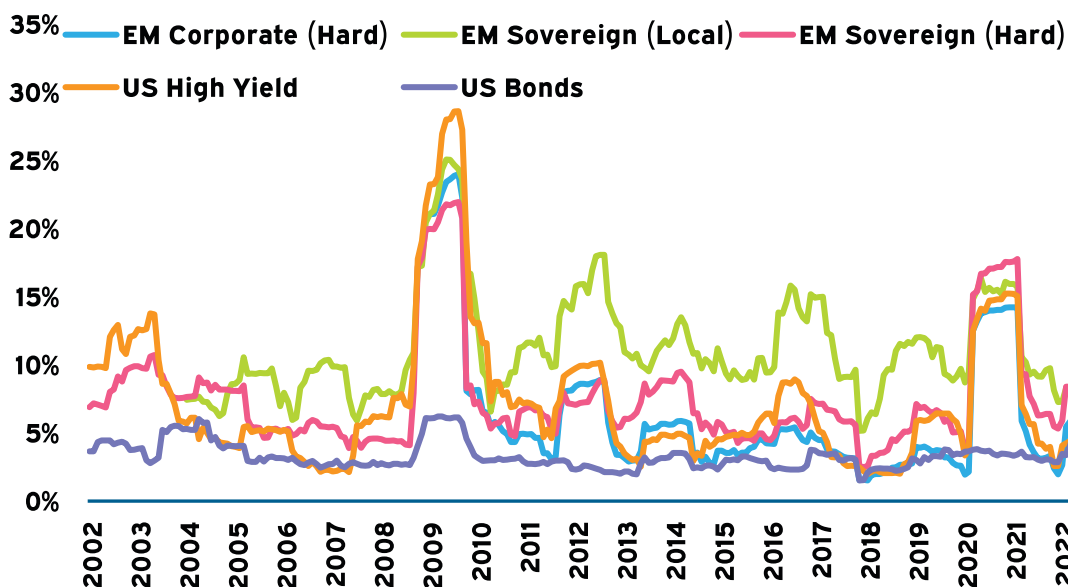


FIGURE 12
Rolling 1-Year Volatility

Source: Bloomberg, eVestment and FactSet as of December 2022. Hard currency EM debt is proxied by the JPM EMBI Global Diversified Index; Local currency EM debt is proxied by the JPM GBI-EM Global / Diversified index; EM corporate debt is proxied by the JPM CEMBI Broad Diversified index; high yield is proxied by the Bloomberg US High Yield index; investment grade bonds are proxied by the Bloomberg US Aggregate index.

Currency risk

Investors in any asset denominated in a foreign currency are subject to the risk of the foreign currency declining relative to the investor's domestic currency. In local currency debt, currency moves are the primary driver of shorter-term returns and volatility, so it is important for investors to understand this currency risk.

The effect of currency movements can be mitigated or even eliminated by purchasing the appropriate hedging instruments, such as forward contracts, futures contracts, or options. Given the traditionally large interest rate differential between US and emerging markets, these costs make a full currency hedge unappealing for most institutional investors.¹¹ In addition, hedging eliminates a portion of the diversification benefit of international investing.

¹¹ Source: "Currency Hedging" Meketa, 2022. (make this a link to recently published currency hedging white paper.)

Credit and default risks

All fixed income investors are exposed to credit risk, which includes the risk of not being repaid by a borrower (*default risk*) and the risk that spreads will widen (*credit spread risk*). Debt issued by emerging market governments has historically been considered to have considerably greater credit risk than that issue by major developed markets (e.g., US Treasuries).

The ratings agencies assign two types of ratings to sovereign debt: a local currency debt rating and a foreign currency debt rating. The reason for the two ratings is that default frequencies have differed in the past based on the currency denomination of sovereign debt. Historically, debt denominated in a local currency has been less likely to default, primarily because a country can raise taxes and lower spending to satisfy their local currency debt burden, but it must purchase foreign currency at the prevailing exchange rate to satisfy their external currency debt burden.

As noted above, corporate debt may be constrained to a rating no greater than that of the government debt for the country in which they are domiciled. Of course, the rating could be lower if the debt issuer is considered a higher credit risk than the government, which is often the case.

In the event of default, investors often recover some of their investment. For example, holders of sovereign debt may negotiate a trade of their defaulted bonds for new bonds that have a higher yield, though at a face-value loss for their initial holdings. However, bond negotiations can take months or even years to resolve, leaving investors with losses and uncertainty. Each default and subsequent restructuring is unique.

Event and political risk

Since the 1990s, emerging market debt markets have continued to evolve and deepen. Even global crises like the GFC and COVID-19 have seen the emerging market debt markets display remarkable resiliency. Multi-lateral agencies have learned from experience that timely support of developing economies can provide critical stability. These agencies, including the International Monetary Fund, the World Bank, the Asian Development Bank, and the Inter-American Development Bank, have extended support to otherwise solvent and responsible governments during periods of extreme market volatility. For example, the provision of special drawing rights (SDRs) from the IMF, dollar and euro liquidity lines from the ECB and the Federal Reserve,¹² and the provision of liquidity and credit facilities¹³ helped to stabilize global debt markets during these crises.¹⁴

In spite of improving liquidity and support, political and economic event risks remain an important consideration. For example, the shuttering of Russian dollar and local currency markets for US and European investors in 2022 as a result of Russia's war on Ukraine resulted in significant losses as investors were unable to sell assets (though limited trading in secondary markets continues¹⁵). The sanctions on Russia debt saw \$34 billion in Russian sovereign debt and another \$28 billion in Russian corporate debt removed from the JPM emerging market indices.¹⁶ JP Morgan priced these bonds at zero when they removed them from the indices.

For emerging market corporate debt, event risk also includes the risk of corporate restructurings or government takeover. When assets are invested outside developed markets, civil insurrection, repudiation of debts, and the state seizure of private assets are political risks that must be considered. Even in a less extreme context, new legislation may alter tax laws, place limits on foreign ownership of domestic assets, or introduce regulatory or accounting costs to businesses. These *political risks* are separate from ordinary market risks.

¹² Source: Federal Reserve dollar swap lines 2009. Mexico, Brazil, and South Korea were among the countries that received critical access to US dollars.

¹³ Source: IMF. <https://www.imf.org/en/Topics/imf-and-covid19/COVID-Lending-Tracker>

¹⁴ Source: <https://www.imf.org/external/np/lic/2009/072909.htm>

¹⁵ Source: Neuberger Berman as of August 20, 2022.

¹⁶ Source: JP Morgan.

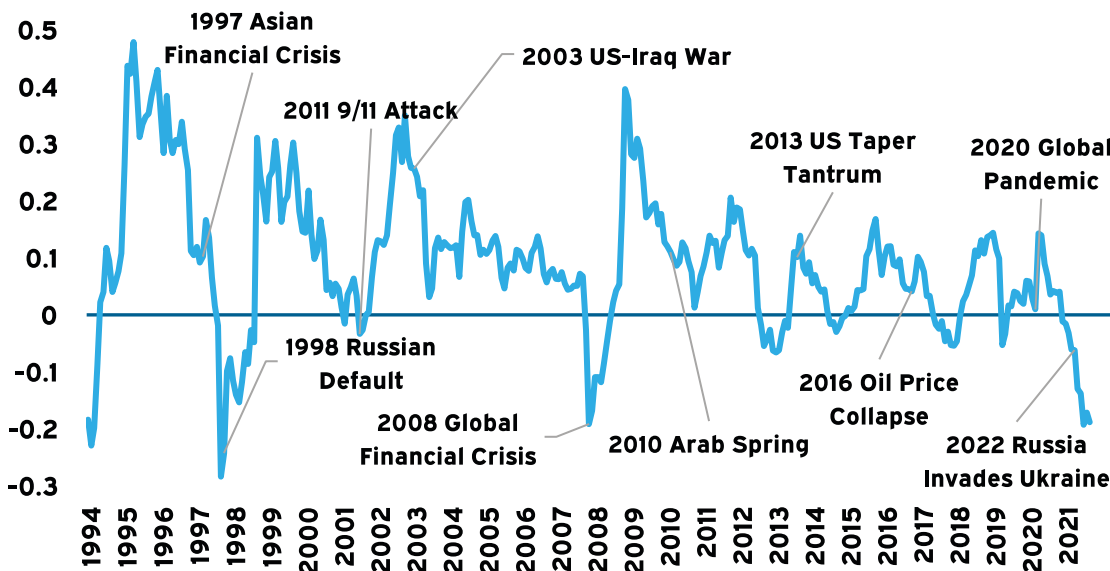


FIGURE 13
Emerging Market Debt
Timeline: Rolling 1-Year
Return 1994 -2022

Source: FactSet and JPM EMBI Global last price as of July 2022.

Historical performance

Emerging market bonds have historically produced returns well in excess of those of the US investment grade bond market and on par with the US high yield bond market (see Figure 14). These strong relative returns were primarily the result of initially high yields coupled with improving credit quality, which resulted in tighter credit spreads. Because yields for emerging market bonds are generally much lower today than they were 20 years ago, emerging market debt is unlikely to achieve the same level of performance in the future. Rather, the best-case scenario would be to use their current level of yields to project an expected return, and it would be more realistic to account for a default (and recovery) rate commensurate with their current credit quality.

	Since 1994	Since 2003	Since 2008	Since 2018
EM Sovereign Debt Hard	7.5%	6.2%	4.3%	-1.3%
EM Sovereign Debt Local		4.9%	1.5%	-2.5%
EM Corporate Debt Hard		5.7%	4.7%	1.1%
Bloomberg US Aggregate	4.4%	3.1%	2.7%	0.0%
Bloomberg US High Yield	6.5%	7.3%	6.1%	2.3%
Russell 3000	9.5%	9.9%	8.7%	8.8%

FIGURE 14
Annualized Returns

Source: InvestorForce, JP Morgan, and eVestment index total returns data as of December 2022. EM sovereign debt hard is represented by JPM EMBI Global Diversified TR Index. EM Sovereign debt local is represented by JPM GBI-EM Global Diversified TR index. EM corporate debt is represented by JPM CEMBI Broad Diversified TR index.

Strategies and investment vehicles

Passive and active management

Many of the strategies employed by active emerging market debt managers invest a substantial portion of their portfolio in assets that are in different benchmarks. For example, an opportunistic strategy many invest in both local and hard currency bonds, as well as corporate debt. This makes benchmarking for active emerging markets debt managers – and performance measurement for those managers – perhaps more challenging than for any other public market asset class.

To account for this potential mismatch between strategy and benchmark, the analysis of relative performance shown in Figure 15 compares managers who predominantly invest in USD-denominated debt to a USD benchmark (the JPM EMBI Global). As with many asset classes, the amount by which active managers have outperformed (or underperformed) the passive emerging market debt benchmark has been cyclical historically.

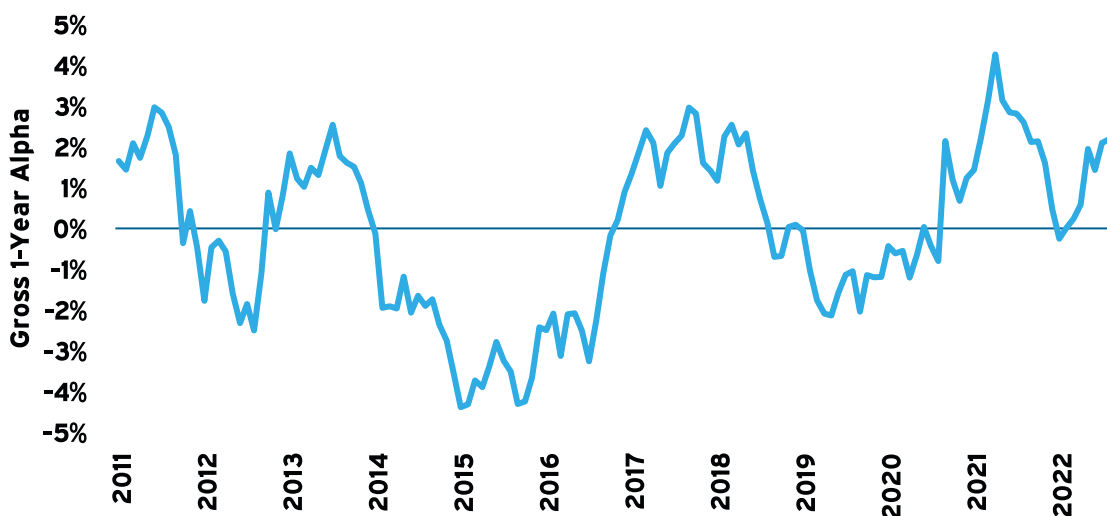


FIGURE 15
Median Manager Return vs. Benchmark

Source: InvestorForce, JP Morgan, and eVestment index total returns data as of December 2022. EM sovereign debt hard is represented by JPM EMBI Global Diversified TR Index. EM Sovereign debt local is represented by JPM GBI-EM Global Diversified TR index. EM corporate debt is represented by JPM CEMBI Broad Diversified TR index.

On average for the period shown, the median manager outperformed, gross of fees, by 37 bp. This level of alpha would have been insufficient to overcome the average fee for active management. The average active fee for these strategies was roughly 0.5% (see figure 16), though fees are sometimes negotiable and may vary by mandate size and vehicle type. Note that fees for passive mandates in this space tend to be higher than passive fees for many other asset classes.

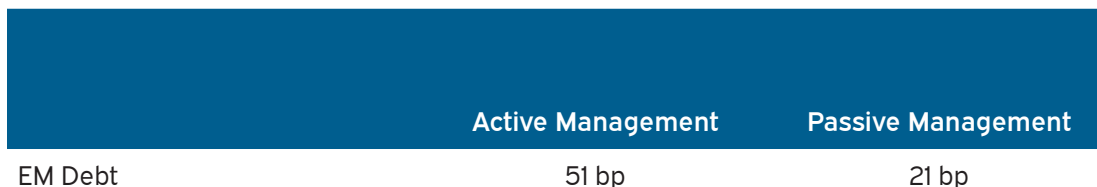


FIGURE 16
Emerging Market Debt Median Manager Fee for \$50 Million

Source: eVestment Alliance as of June 2022. Includes local, hard, and mixed-currency strategies.

The best metric for evaluating the *opportunity* for active managers to produce excess returns is perhaps the interquartile return spread. Wider spreads imply that active managers are generating more differentiated returns (versus each other). Therefore, there may be greater potential for active managers to add (or detract) value. Active

managers are generally tasked with identifying and exploiting inefficiencies, so given the many different decisions that can be made (e.g., on rates, spreads, curve, countries, sectors, etc.), emerging market debt likely offers an opportunity for active managers to add value. As Figure 17 shows, interquartile spreads for active emerging market debt managers have typically been wider when compared to US investment grade bond managers.

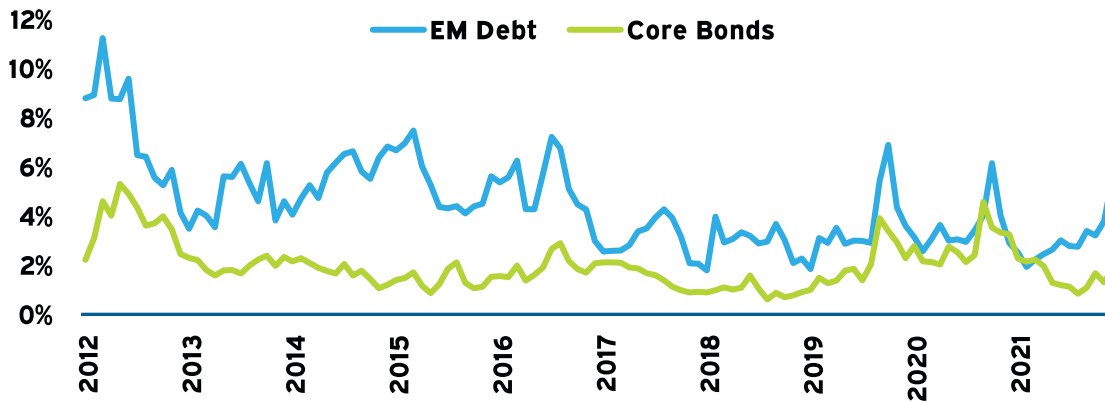


FIGURE 17
Rolling 1-Year Interquartile Spreads

Source: Morningstar and Meketa calculations as of June 2022. Returns are gross of fees. Analysis includes local, hard, and mixed-currency strategies. Over 50% of the funds that began the 10-year period went inactive during the period. This suggests that survivorship bias influenced the results of this analysis.

There are a growing but limited number of options available for obtaining passive exposure to the asset class. As of September 2022, there were twelve firms offering 16 passive emerging market debt products.¹⁷ The largest index fund providers offer vehicles in this space, including separate accounts, institutional commingled funds, and mutual funds. However, it appears that most passive vehicles have short track records and low assets under management, and tracking error is higher than what institutional investors are accustomed to for passive mandates in most public markets.¹⁸

¹⁷ Source: Morningstar and Meketa calculations. Vanguard, JP Morgan, and BlackRock among others offer emerging market bond ETFs.

¹⁸ Source: Morningstar and Meketa analysis as of June 2022.

Note that the relatively high transaction costs (described below) involved in emerging markets may make it more difficult for managers – both active and passive – to closely track an index or to outperform an index that does not reflect transaction costs.

Commingled fund structures may offer investment cost savings while offering ample liquidity. Total operating costs are often lower for a commingled fund, which can be many times the size of a separate account for most institutional investors. Further, commingling smaller accounts also lowers transaction costs, as the netting of inflows and outflows from different mandates reduces the volume of securities that need to be traded. Therefore, for most institutional investors that seek exposure to emerging market debt, a commingled fund should be the preferred choice. For institutional investors that wish to exclude countries or specific issuers, a separate account could also be considered if there is no index fund that meets their needs.

Investment costs

The costs of investing in emerging market debt are higher than those of investing in developed fixed income markets. First, emerging markets are relatively illiquid when compared to larger, more mature bond markets. Illiquidity can increase the transaction costs for any purchase or sale, especially during periods of market volatility. Investment managers estimate that transaction costs can range between 26 and 89 basis points, depending on the liquidity of the security.¹⁹ Trading costs are a drag on the ultimate performance of an investment where a higher cost of

¹⁹ Source: Neuberger Berman as of August 2022. The EMBI Global mid-to-offer three-year average trading cost is 0.26% while the CEMBI has a three-year mid-to-offer transaction cost of 0.33%.

purchase may lower the total return. Second, the custody and accounting work required to maintain the investments may be more complex and more expensive, and significant currency hedging costs may be incurred for some strategies. Third, foreign governments sometimes levy withholding taxes on interest, thus increasing costs and reducing returns for local currency debt. Finally, portfolio management fees are relatively high compared to developed fixed income markets.

When combined, investment management fees and expenses for commingled emerging market debt funds generally range between 30 and 80 basis points per year.²⁰ Separate account fees may be lower (on the surface), but as they do not include custodial and administrative expenses, the net cost is likely to be higher. Transaction-related costs, which often represent the largest factor of the total cost of investing in emerging market debt, are not easily observable (i.e., they are hidden within the returns of the account).

²⁰ Source: eVestment Alliance data for Comingled Fund Global Emerging Markets FI-Blended Currency Universe, as of July 2022. Dedicated corporate bond mandates are the most expensive.

Portfolio allocation options

The emerging market debt asset class has both broadened and deepened over the past decade such that it provides investors the opportunity to gain diversified exposure to dollar and non-dollar debt as well as corporate and government issuers. We do not recommend a dedicated hard-currency or corporate debt allocation as an investor's sole exposure to emerging markets debt as such an investment would unnecessarily limit the investment opportunity set. We believe that blended or opportunistic strategies offer the best option for gaining diversified exposure and giving active managers a better opportunity to outperform. If the investor chooses an opportunistic or blended debt strategy, Meketa Investment Group typically recommends the use of a customized, or blended, benchmark using a combination of the JPM external debt, local debt, and corporate indices. A blended strategy that includes sovereign and corporate debt issued in US dollars, euros, and local currency offers the investment manager ample opportunity to mitigate country, credit, and currency risks through naïve hedging across countries and issuers.

Recommendation

Meketa Investment Group believes that emerging market debt investing is appropriate for most long-term portfolios as a tool for overall portfolio diversification. We recommend that investors with large, well-diversified portfolios allocate up to 5% of total assets to emerging market debt. Increasing levels above this amount may be warranted in some cases, but we believe this level is prudent given the likely increase in currency risk this allocation will introduce at the portfolio level. The allocation should be considered within the context of the rest of the portfolio, including exposure to emerging markets in other asset classes.

Because the cost of a full currency hedge in emerging markets would likely diminish long-term returns, we do not believe that fully hedged portfolios are appropriate for most plans with a long-term investment horizon. We do recommend, however, that active managers be allowed to hedge currency exposure opportunistically. We believe that constraints regarding country- or issue-specific weightings should be determined by the investor and the manager, rather than be dictated by the benchmark. Luckily, there are many different benchmarks to choose from, and customizing a benchmark is likewise an option for some investors.

Appendix: performance of the broad manager universe

The analysis below expands the manager universe to include funds that were not predominantly investing in USD denominated debt (though it still compares it to the same benchmark). The overall results support the theme of cyclical alpha. For example, for most of the period from 2001 through 2013, the median emerging market debt manager outperformed, gross of fees, versus the JP Morgan EMBI Global benchmark (see figure 15). Evaluated from the perspective of the post-GFC period, the median alpha has been only slightly better than zero, before fees.

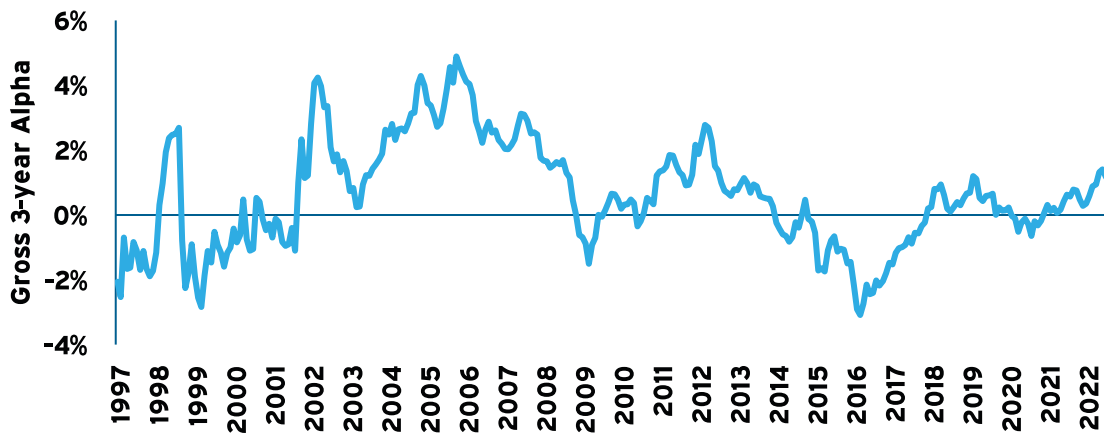


FIGURE 18
Median Manager Return vs. Benchmark

Source: Morningstar and eVestment Alliance as of September 2022. Includes local, hard, and mixed-currency strategies. Note that survivorship bias likely affected some of these results, as 38% of the funds that began the preceding 10-year period went inactive during the period. Similarly, when Meketa last reviewed this data in 2014, over 50% of active emerging market debt funds became inactive between 2004 and 2014.

Benchmarks

Defining the investable opportunity set for emerging markets debt is arguably more challenging than for any other publicly traded market. Because of the many different approaches to investing in the asset classes, there are a plethora of benchmarks that are used to define the space. The primary index provider used by most institutions for measuring the performance of emerging market debt is JP Morgan (JPM), though Bloomberg indices are also used.

Hard currency debt

The JPM Emerging Markets Bond Index (“JPM EMBI”), which originally focused on Brady bonds, was formed in the early 1990s and became the most widely published and referenced emerging market debt index. But in 2002, the JPM EMBI was discontinued and replaced by the JPM Emerging Markets Bond Index Plus (“JPM EMBI Plus”). The EMBI Plus tracks a wider range of external currency bonds, encompassing more of the market than just Brady bonds, and covering 26 countries.

Two additional indices were subsequently created to expand on the JPM EMBI Plus: the JPM EMBI Global Index and JPM EMBI Global Diversified Index. The “Global” versions include a wider range of securities and currently covers 70 countries. This index offers investors a market-capitalization weighted exposure to the broad asset class. And to off-set the very considerable market capitalization differences between the 70 countries debt markets, the “Global Diversified” version limits the weights of countries that would otherwise dominate the indexes with their debt issuance and thereby limits large country risks associated with the Global version.

	EMBI Plus	EMBI Global	EMBI Global Diversified
--	-----------	-------------	-------------------------

Index highlights

The first broad liquid EM index introduced to the market after the Brady-only EMBI

These indices expand upon the composition of EMBI+ by using a different selection process that defines country eligibility rules with a combination of income-based criteria and sovereign long-term credit rating criteria. These rules allow the indices to include a number of higher-rated countries that international investors have nevertheless considered part of the emerging market universe

Selects countries according to a sovereign credit rating level

Selects countries based on a formula which combines the World Bank-defined per capita income brackets and each country's debt-restructuring history

FIGURE 19
Sovereign Hard EM Debt Benchmarks – The JPM EMBI indices

Source: JP Morgan

Index characteristics as of 12/31/2022

EMBI Plus	EMBI Global	EMBI Global Diversified
Mkt Cap: \$258.7bn	Mkt Cap: \$1,080.8bn	Mkt Cap: \$598.5bn
# of Issuers: 30	# of Issuers: 160	# of Issuers: 160
# of Instruments: 174	# of Instruments: 929	# of Instruments: 929
# of Countries: 26	# of Countries: 70	# of Countries: 70
Avg Rating: BBB-/Baa3/BBB-	Avg Rating: BBB-/Baa3/BBB-	Avg Rating: BBB-/Ba1/BB+
Yield: 7.75%	Yield: 7.77%	Yield: 8.56%
Spread: 375 bp	Spread: 374 bp	Spread: 453 bp
Duration: 7.9 years	Duration: 6.9 years	Duration: 6.8 years

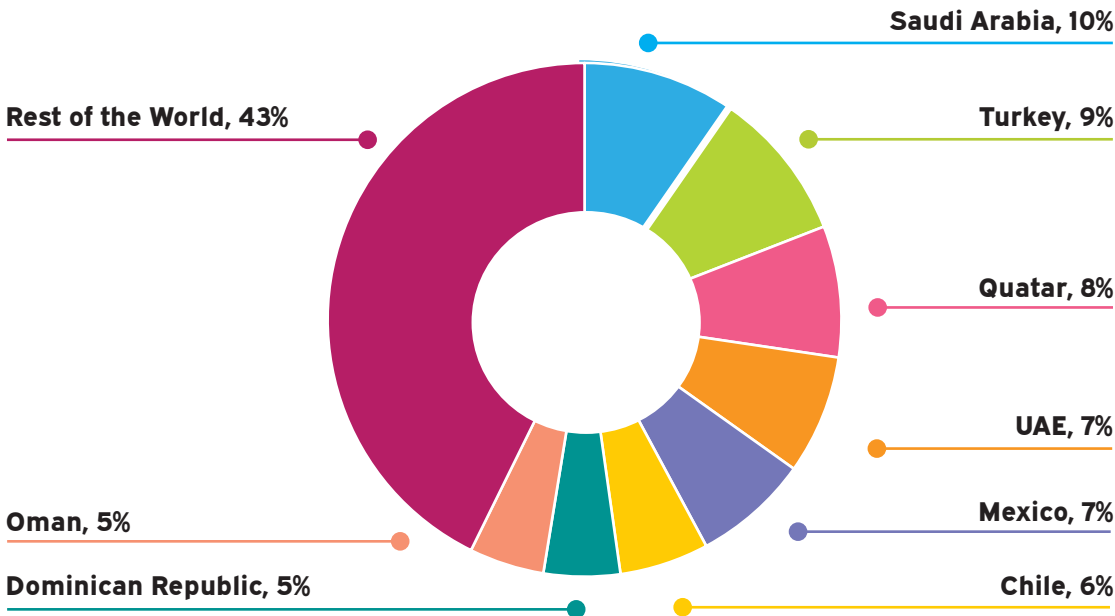


FIGURE 20
JPM EMBI+ Cap % by Country

Source: JP Morgan as of December 2022

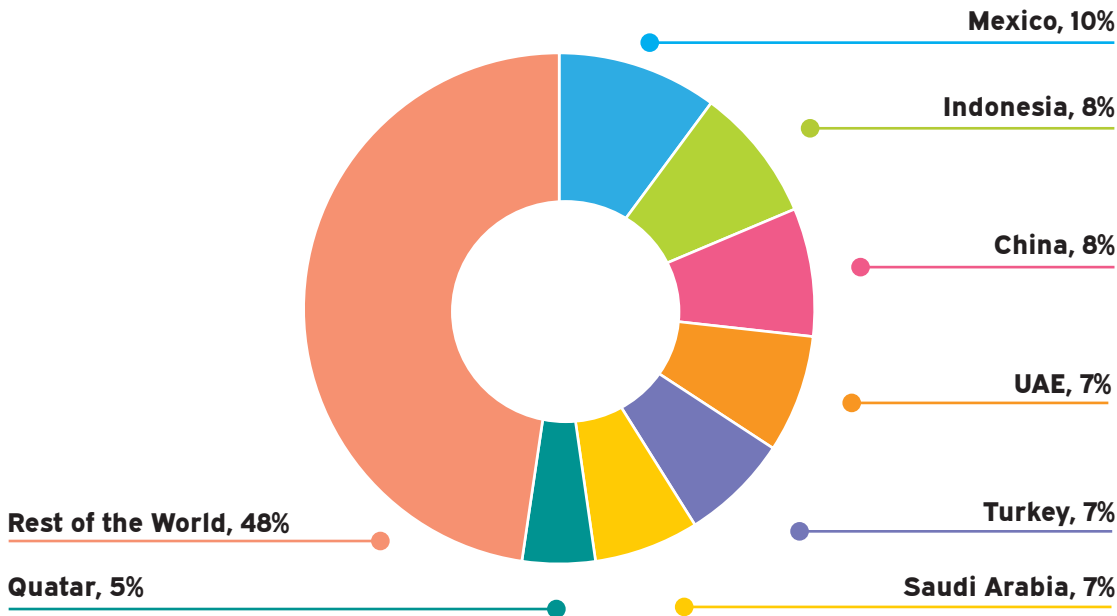


FIGURE 21
JPM EMBI Global Market Cap % by Country

Source: JP Morgan as of December 2022

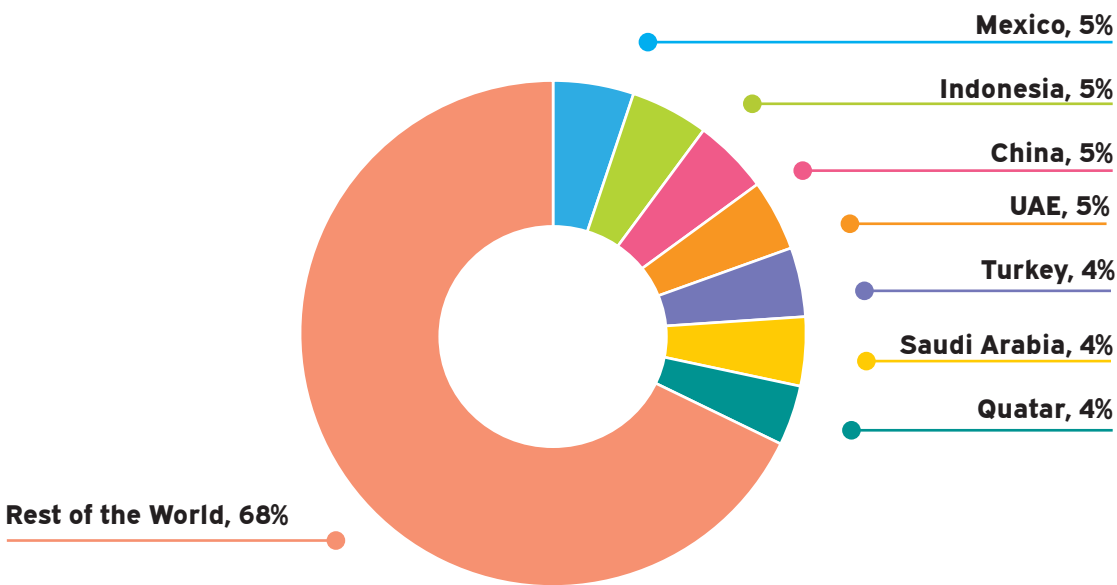


FIGURE 22
JPM EMBI Global Diversified Market Cap % by Country

Source: JP Morgan as of December 2022

Local currency debt

In 2002, JPM developed indices that focus on emerging market sovereign debt issued in local currencies. The JPM Government Bond Index – Emerging Markets (“GBI-EM”) series has three main composites. “Diversified” versions exist for all composites where weightings among countries and issuers are more evenly distributed within the index. The “Broad” versions of the GBI-EM series typically include what many investment managers consider un-investable markets, so they are not widely used by investment managers.

	GBI-EM / Diversified	GBI-EM Global / Diversified	GBI-EM Broad / Diversified
Index highlights	Replicable	Investible	Broadest
	Limits inclusion to only those countries that are readily accessible and where no impediments exist for foreign investors	An investible benchmark that excludes countries with explicit capital controls, but does not factor in regulatory/tax hurdles in assessing eligibility, unless such hurdles significantly hinder investors' ability to replicate the index	An all-encompassing index that includes all eligible countries containing eligible instruments regardless of capital controls, taxes, or access issues
Major differences in index criteria	Caps each country at 10%. Excludes India, Indonesia, Thailand, Argentina, Chile, and Egypt	Caps each country at 10%. Excludes India and Argentina	Caps each country at 10%. Includes all countries in the GBI-EM universe
	Diversified versions of all three composites cap the maximum weight of countries at 10% and a minimum weight of 1% per country		
Index characteristics as of 12/31/2022	Mkt Cap: \$2,483.9bn # of Countries: 16 # of Issues: 214 Avg Rating: BBB+/Baa2/BBB Yield: 4.61% Duration: 5.0 years	Mkt Cap: \$2,920.8bn # of Countries: 20 # of Issues: 308 Avg Rating: BBB+/Baa2/BBB Yield: 4.84% Duration: 5.1 years	Mkt Cap: \$4,036.0bn # of Countries: 22 # of Issues: 388 Avg Rating: BBB+/Baa2/BBB Yield: 5.04% Duration: 5.4 years

FIGURE 23
Sovereign Local Currency Benchmarks – The JPM GBI-EM indices

Source: JP Morgan

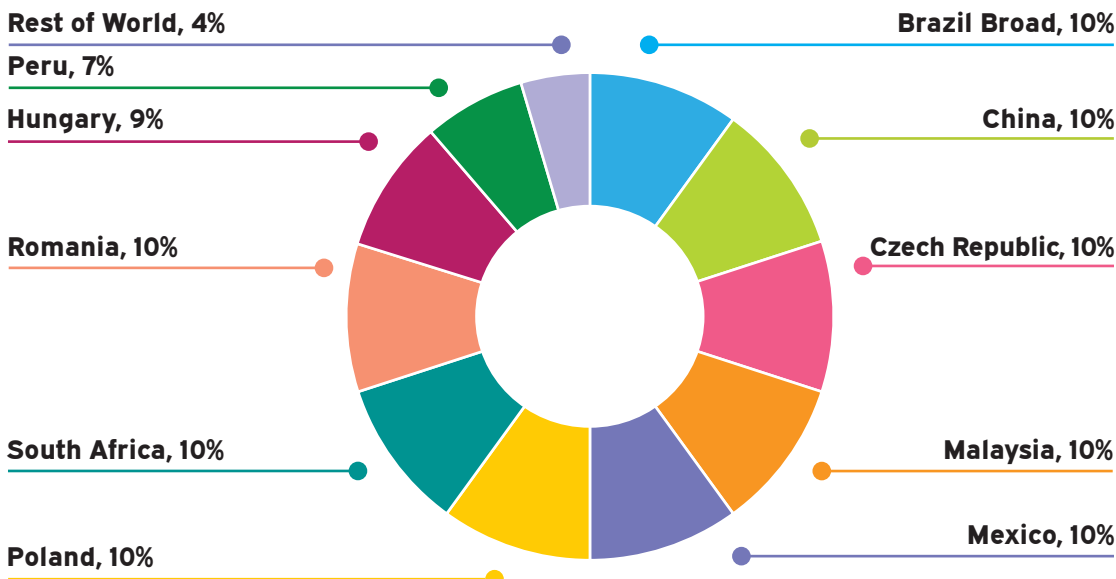


FIGURE 24
JPM GBI EM Diversified Index – Local FX (Market Cap %)

Source: JP Morgan as of December 2022



FIGURE 25
JPM GBI EM Global Diversified Index – Local FX (Market Cap %)
 Source: JP Morgan as of December 2022.

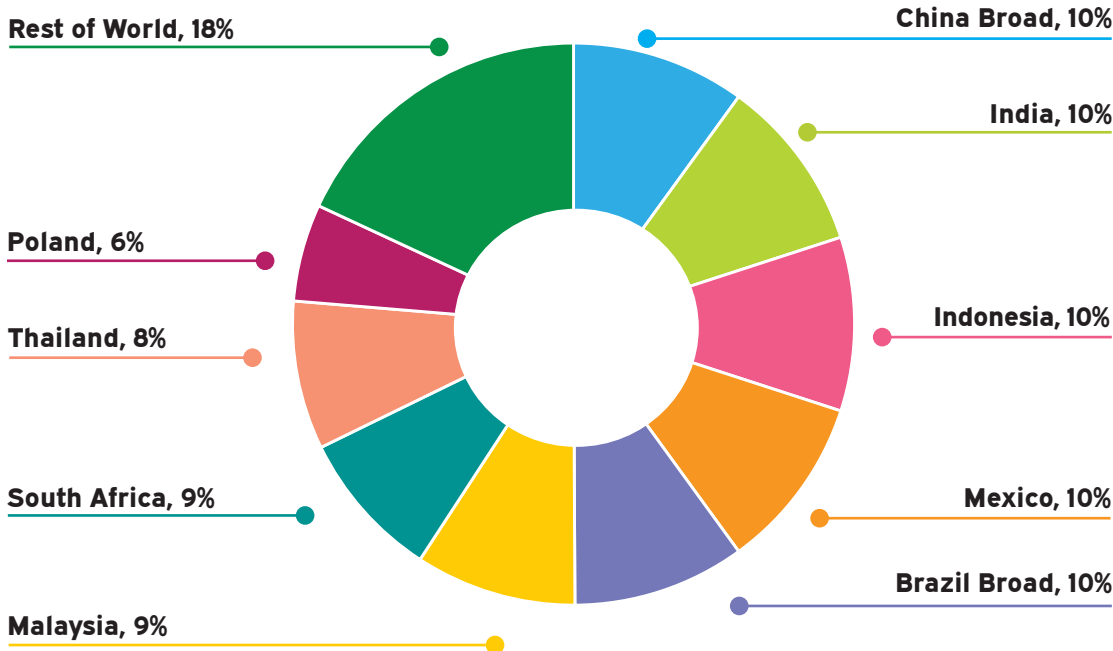


FIGURE 26
JPM GBI EM Broad Diversified Index – Local FX (Market Cap %)
 Source: JP Morgan as of December 2022.

Corporate debt

To track the rapidly evolving corporate debt markets, JPM introduced the CEMBI series of indices in January 2008. An updated CEMBI CORE was added in 2017. Though outside the scope of this paper, since the Global Financial Crisis, JPM has launched versions of the corporate-focused CEMBI that include investment grade, high yield, and ESG themes.²¹

²¹ Source: JP Morgan as of December 2022.

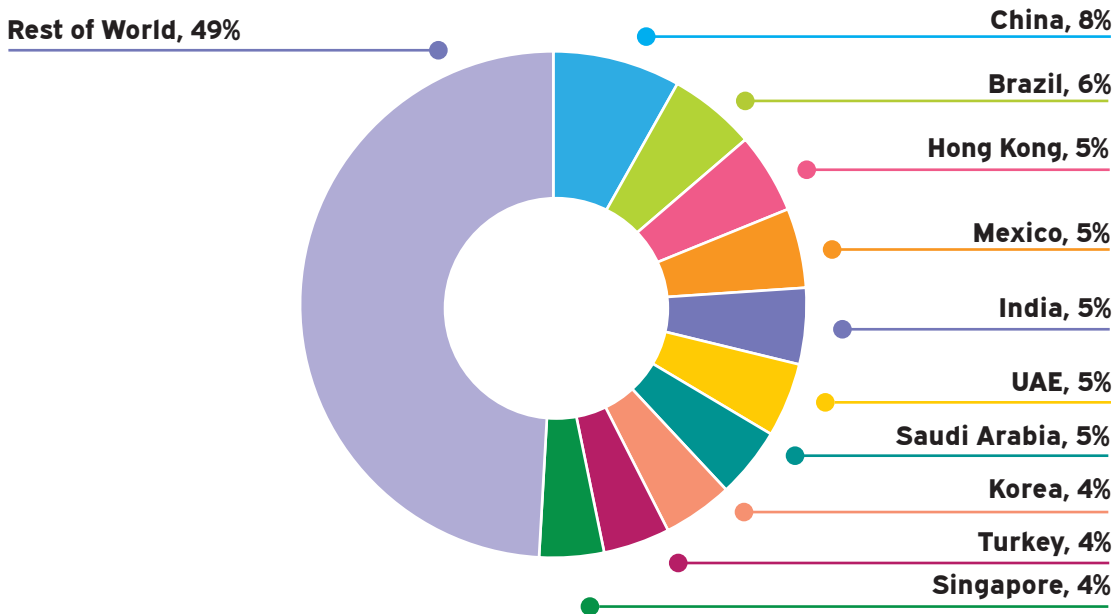


FIGURE 27
JPM CEMBI Diversified Index

Source: JP Morgan as of December 2022.

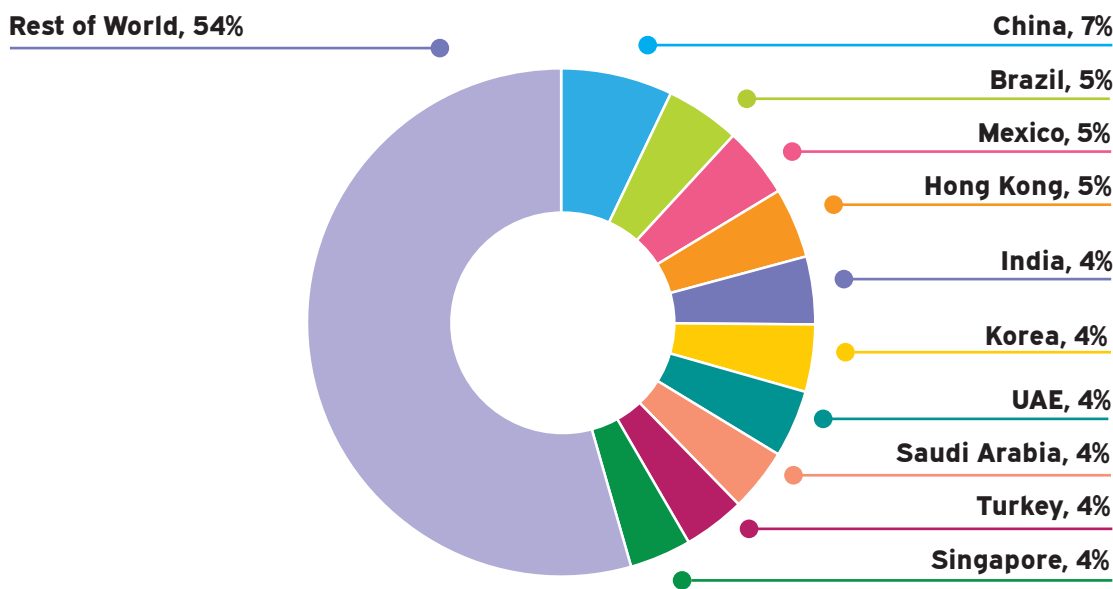


FIGURE 28
JPM CEMBI Broad Diversified Index

Source: JP Morgan as of December 2022.

Investors should view a portfolio’s adherence to a particular benchmark differently in the global debt markets than in the global equity markets. When a particular stock is weighted more highly in a value-weighted equity index such as the S&P 500, it is usually because the company has experienced growth over time. That is, its value represents the market’s collective opinion on the worth of the stock. In the construction of a debt benchmark, however, the countries that are weighted most heavily in the benchmark are those countries that have the most debt outstanding. Therefore, emerging market debt benchmarks should be used by investors as a means of measuring the performance of investment managers but should not necessarily dictate the manager’s portfolio composition.

JP Morgan Indices	Inception Date	Currency Denomination	Average Credit Quality	Number of Countries	Number of Issuers	Yield	Duration	Market Capitalization (\$ B)
EMBI Plus	Dec 1993	US Dollar	BBB-	26	30	7.8	7.9	259
EMBI Global	Dec 1993	US Dollar	BBB-	70	160	7.8	6.9	1,081
EMBI Global Diversified	Dec 1993	US Dollar	BB+	70	160	8.6	6.8	599
GBI – EM Broad	Jan. 2002	Local	BBB	22	22	5.0	5.4	4,036
GBI – EM Broad Diversified	Jan 2003	Local	BBB	22	22	6.9	5.0	1,588
GBI – EM Global	Jan 2002	Local	BBB+	20	20	4.8	5.1	2,921
GBI – EM Global Diversified	Jan 2003	Local	BBB+	20	20	6.9	4.9	1,253
GBI – EM	Jan 2002	Local	BBB+	16	16	4.6	5.0	2,484
GBI – EM Diversified	Jan 2003	Local	BBB+	16	16	7.3	4.6	431
Euro EMBI Global	Dec 1998	Euro	BBB	35	35	5.1	5.8	212
Euro EMBIG Diversified	Dec 1998	Euro	BBB	35	35	5.3	5.7	140
NEXGEM	Dec 2001	US Dollar	B	35	35	13.5	5.1	96
JADE Broad Diversified	Dec 2004	Local	A-	8	8	4.3	6.4	1
JADE Global Diversified	Dec 2004	Local	A-	7	7	4.1	6.4	1

FIGURE 29
Emerging Market Sovereign Debt Benchmarks as of December 31, 2022

Source: JJP Morgan as of December 2022.

Note: * Source: JP Morgan as of December 2022; the JP Morgan EM aggregate index is 71% Sovereign and 29% Corporate.

Bloomberg Indices	Inception Date	Average Credit Quality	Number of Countries	Number of Issuers	Yield to Maturity	Modified Adj. Duration	Market Value (\$ B)
EM USD Aggregate*	US Dollar	BBB	83	2,291	4.6	7.0	2,409
EM Local Currency - Government	Local	A	22	610	3.8	7.1	4,940
EM Local Currency – Government Universal	Local	A	25	924	4.3	7.0	6,292

Disclaimers

This document is for general information and educational purposes only, and must not be considered investment advice or a recommendation that the reader is to engage in, or refrain from taking, a particular investment-related course of action. Any such advice or recommendation must be tailored to your situation and objectives. You should consult all available information, investment, legal, tax and accounting professionals, before making or executing any investment strategy. You must exercise your own independent judgment when making any investment decision.

All information contained in this document is provided "as is," without any representations or warranties of any kind. We disclaim all express and implied warranties including those with respect to accuracy, completeness, timeliness, or fitness for a particular purpose. We assume no responsibility for any losses, whether direct, indirect, special or consequential, which arise out of the use of this presentation.

All investments involve risk. There can be no guarantee that the strategies, tactics, and methods discussed in this document will be successful.

Data contained in this document may be obtained from a variety of sources and may be subject to change. We disclaim any and all liability for such data, including without limitation, any express or implied representations or warranties for information or errors contained in, or omissions from, the information. We shall not be liable for any loss or liability suffered by you resulting from the provision to you of such data or your use or reliance in any way thereon.

Nothing in this document should be interpreted to state or imply that past results are an indication of future performance. Investing involves substantial risk. It is highly unlikely that the past will repeat itself. Selecting an advisor, fund, or strategy based solely on past returns is a poor investment strategy. Past performance does not guarantee future results.